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See attached final report

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Final Report for ONR Grant N00014-91-J-1473, Drs. Hsiao-ming Hsu and Robert C. Beardsley, Principal Investigators

The primary objective of this project was to examine the nature of wind-driven upwelling and downwelling along a 2-dim shelf with sloping bottom topography. The approach was to use the Semi-spectral Primitive Equation Model (SPEM) developed by D. Haidvogel and coworkers as the basic circulation model, and conduct a series of idealized model runs to investigate the influence of bottom slope, surface windstress and heat flux, and mixing on the surface and bottom boundary layers which form during the initial stages of up/downwelling. The advanced turbulent closure schemes of Mellor and Yamada were added to our version of SPEM and the model studies were conducted. These studies showed that an asymmetry develops in the bottom boundary layer thickness depending of if the flow is up or downwelling, and that if the coast is shallow enough, that the surface and bottom boundary layers can merge near the coast. Two AGU abstracts were presented and several talks were given on this work. A paper co-authored with A. Herman on the technical aspects of the vertical model resolution was also published.

Hermann, A.J. and H.-M. Hsu, 1989. A semispectral ocean circulation model with mixed layer physics; Part 2: the value of stretched coordinates. *EOS, Transactions, American Geophysical Union*, fall meeting.

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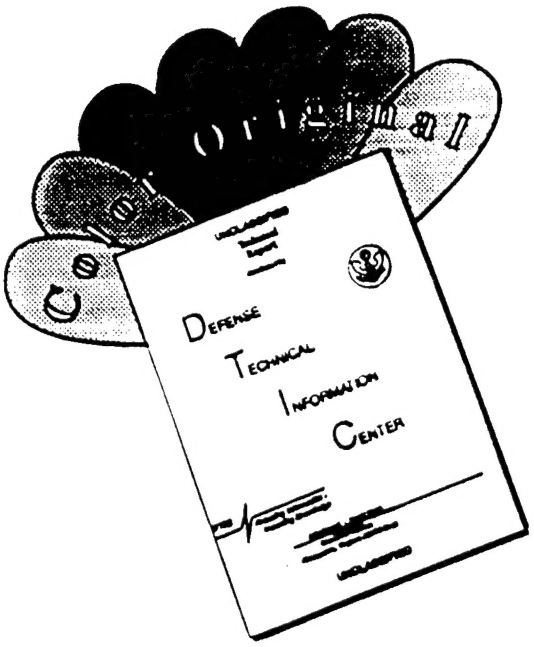

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